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(54) SLIDE DOOR FEEDING STRUCTURE

(57) Abstract:

PROBLEM TO BE SOLVED: To provide slide door feeding structure which can solve a conventional problem.

SOLUTION: A crossing part harness guide 13 comprising a plurality of pieces 12 is provided between the slide door and a car body 11. At one end of the crossing part harness guide 13, a car-body-side supporting shaft 21 is provided to be rotatably supported by a bracket 22 fixed to the car body 11. At the other end of the crossing part harness guide 13, a door-side supporting shaft 31 is provided to be rotatably supported by a connecting member 32. A groove 33 of the connecting member 32 is slidably engaged with a projection of a slide guide member provided at the slide door. A harness 14 extending from the car body 11 to the slide door is inserted into the crossing part harness guide 13 and then, extended from the center of the door-side supporting shaft 31 for wiring.

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CLAIMS

[Claim(s)]

[Claim 1] In slide door feed structure by which harness was cabled between the body and a slide door, While supporting to a bracket in which the body side supporting spindle of a passage part harness guide end face which consists of two or more piece connected mutually enabling free rotation was provided by said body, enabling free rotation, The door side supporting spindle at said tip of a passage part harness guide is supported to a connecting member provided so that back and forth movement might be free to said slide door and it might not rotate to it, enabling free rotation, Slide door feed structure having inserted in said harness into said passage part harness guide from the body side, and extending and cabling it at a door from said connecting member through said door side supporting spindle.

[Claim 2] In slide door feed structure by which harness was cabled by slide door from the body, The door side harness guide which in rotation out of a determined direction is connected and becomes so that may be mutually prevented with the piece which two or more piece adjoins mutually enabling free rotation, While connecting with a connecting member provided so that U-turn allocation was carried out in the state where it turned up in a halfway part at said slide door, back and forth movement might be free to a slide door and a tip of the door side harness guide concerned might not be rotated to it, Slide door feed structure cabling said harness which fixed a end face of said door side harness guide to said slide door, and was cabled by slide door from the body side in the door side harness guide concerned.

[Claim 3] In slide door feed structure by which harness was cabled by slide door from the body, While supporting to a bracket in which the body side supporting spindle of a passage part harness guide end face which consists of two or more piece connected mutually enabling free rotation was provided by said body, enabling free rotation, The door side supporting spindle at said tip of a passage part harness guide is supported to a connecting member provided so that back and forth movement might be free to said slide door and it might not rotate to it, enabling free rotation, The door side harness guide which in rotation out of a determined direction is connected and becomes so that may be mutually prevented with the piece which two or more piece adjoins mutually enabling free rotation, While carrying out U-turn allocation in the state where it turned up in a halfway part at said slide door and connecting a tip of the door side harness guide concerned to said connecting member, A end face of said door side harness guide is fixed to said slide door, Slide door feed structure having inserted in said harness into said passage part harness guide from the body side, having inserted in into the door side harness guide through said door side supporting spindle and said connecting member, and extending and cabling at a door from the door side harness guide end face.

[Claim 4] The slide door feed structure according to claim 1 or 3 having inserted in said harness into said passage part harness guide from the center of said body side supporting spindle, and extending and cabling it at a door from the connecting member concerned through inside of the center of said door side supporting spindle, and said connecting member.

[Claim 5] The slide door feed structure according to claim 1, 3, or 4 forming in a section U shape to which piece which constitutes said passage part harness guide is provided in a wall by one side part, and an other side portion carries out an opening.

[Claim 6] The slide door feed structure according to claim 1, 3, 4, or 5 characterized by coming to connect two or more piece mutually, enabling free rotation as rotation out of a determined direction is mutually prevented with the piece which said passage part harness guide adjoins.

[Claim 7] The slide door feed structure comprising according to claim 2 or 3:

It is a slide guide member to said slide door.
 An engagement part which becomes said connecting member from a slot or a projection which engages with said engaged portion while providing an engaged portion which becomes this slide guide member from a projection or a slot.
 A swelling prevention guide which allocates said door side harness guide in said slide guide member, and prevents a swelling of the upper part of this slide guide member, and the lower part in which said door side harness guide curved to either at least.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]
 [Field of the Invention] This invention relates to the slide door feed structure which supplies electric power to the slide door which opens and closes a door opening.

[0002]
 [Description of the Prior Art] Conventionally, the door opening for getting on and off is provided in vehicles, such as a one-box car, at the vehicle side part.

This door opening is constituted so that it may be opened and closed with a slide door.

It is built over harness between this slide door and body.
 It is constituted so that electric power can be supplied to the closure etc. which were provided in the slide door.

[0003] Drawing 21 is a figure showing the supporting section of the slide door 1001 of the 1st conventional example (refer to JP, 11-348683, A), and the harness 1003 over which it was built from the body 1002 to the slide door 1001 is shown.

[0004] As for this harness 1003, one end is provided in the member by the side of the body 1002, and the other end is provided in the member by the side of the slide door 1001 rotatable.

It is supported by a metal wire or the arm body 1004 with the flexibility in which curved deformation is possible, and is covered by the tube.

[0005] In the 2nd conventional example (refer to JP, 11-255041, A) of drawing 22, the guide rail 2002 is formed in the slide door 2001, and the slider 2003 is formed movable in this guide rail 2002. The end of the flat harness 2004 which carried out U-turn cabling is attached to this slider 2003.
 The end of the same metal wire as the above-mentioned or the arm body 2005 is attached to this slider 2003.

[0006] However, the metal wire or the arm bodies 1004 and 2005 which were allocated between the body 1002-2011 and the slide door 1001 and 2001 in such feed structures, By opening and closing of a door, there was a possibility that slack and torsion might be received and this slack and torsion might also attain to the harness 1003-2006 by change of the interval between the body 1002-2011 and the slide door 1001-2001, change of the door angle to the body 1002-2011 at the time of open and closed, etc.

[0007] Since neither the part which slack and torsion produce, nor its form of said metal wire or the arm body 1004-2005 is constant, it is necessary to take the space for avoiding interference with other parts etc.

[0008] Since the power which is pushed on the flat harness 2004 which moves in the inside of the guide rail 2002, and is lengthened by opening and closing of the slide door 1001-2001 was added, it was required to take the endurance of the flat harness 2004, etc. into consideration.

[0009] In the flat harness 2004, the flat harness 2004 which carried out U-turn cabling, The guide for regulating a curve is indispensable so that it may curve greatly and may not swell in connection with the opening and closing movement of the slide door 1001, and between the flat harness 2004 and the harness 1003 over which it was built from the body 1002 to the slide door 1001, a connector is required.

[0010] On the other hand, drawing 23 is a figure showing the 3rd conventional example.

The slide door 3003 connected with the body 3002 in the parallel link 3001 is shown (refer to JP, 10-175483, A).

Fixed holding of the passage wiring section 3005 of this slide door 3003 and the harness 3004 cabled between the bodies 3002 is carried out to one side of the parallel link 3001 with the harness holder 3006.

[0011] Wiring of the slide door 3003 inserts in the inside of the channel shape member 3011 formed by resin, and the harness guide 3013 which connected two or more ... rotatable mutually by the guide pin 3012 and ..., as shown in drawing 24, As the tip is shown also in drawing 25, it is attached at one tip of said parallel link 3001 rotatable, and the end face is being fixed to the slide door 3003. And U-turn cabling of said harness guide 3013 is carried out.

[0012] As shown in drawing 23, the harness guide 3013a of the bottom to which this harness guide 3013 makes a U-turn caudad is accommodated in the guide cover 3021.

Hanging down is prevented.

[0013]

[Problem(s) to be Solved by the Invention] However, if it is in such feed structure, fixed holding of the passage wiring section 3005 is only carried out to the parallel link 3001 rotated to the shaft center by the side of the body 3002, it pulls with rotation of the parallel link 3001, and slack and torsion are received. Wiring is exposed and appearance is also bad.

[0014] The tip of said harness guide 3013, Since it is only attached at the tip of the parallel link 3001 rotatable and horizontal (moving direction) power is received in the harness guide 3013 with rotation of the parallel link 3001, it is necessary to strengthen as [suppress / by harness guide 3013 the very thing / modification and a curve].

[0015] It is only accommodated in the guide cover 3021 so that only the bottom harness guide 3013a to which the harness guide 3013 makes a U-turn caudad may not hang down. the channel member 3011 which constitutes the harness guide 3013 and ... the stopper etc. keep comrades from rotating outside a determined direction not being formed, but by cross-direction movement of the slide door 3003. There is a possibility that a curve or middle may swell so that the harness guide 3013 may make the circle of U-turn large, and interference with other parts etc. can be considered.

[0016] And fixed holding of the passage wiring section 3005 is carried out to the parallel link 3001 rotated focusing on the body 3002 side. However, a slide guide rail is provided in the body 3002, and the anterior part of a guide rail curves toward the body 3002 center side, The roller bracket which has a roller rolling on the inside of this guide rail is provided in the slide door 3003, In the slide door device from which the distance of the passage wiring section 3005 between the body 3002 and the slide door 3003 changes with door opening closed movements, since the passage wiring section 3005 must absorb change of this distance, it cannot use for the structure which carries out fixed holding to such a parallel link 3001.

[0017] This invention is made in view of such a conventional technical problem, and an object of this invention is to provide the slide door feed structure out

of which it comes to solve an aforementioned problem.

[0018]

[Means for Solving the Problem] If it is in slide door feed structure of claim 1 of this invention in order to solve said technical problem, In slide door feed structure by which harness was cabled between the body and a slide door, While supporting to a bracket in which the body side supporting spindle of a passage part harness guide end face which consists of two or more piece connected mutually enabling free rotation was provided by said body, enabling free rotation, The door side supporting spindle at said tip of a passage part harness guide is supported to a connecting member provided so that back and forth movement might be free to said slide door and it might not rotate to it, enabling free rotation, Said harness was inserted in into said passage part harness guide from the body side, and was extended and cabled at a door from said connecting member through said door side supporting spindle.

[0019] That is, since harness between the body and a slide door is cabled in a passage part harness guide, a passage part harness guide receives external force accompanying opening and closing movement of a slide door, such as ****, compression, slack, and bending, and it is not directly applied to harness. It is not necessary to take large free space in consideration of interference with other parts, without harness swelling besides a passage part harness guide.

[0020] Since two or more piece is connected mutually, enabling free rotation, it is not said constantly [a passage part harness guide / slack, torsion, and a part to produce or its form to bend]. Each piece can rotate to change of an interval between the body accompanying opening and closing movement of a slide door, and a slide door mutually, and can curve and carry out the distraction to it, and it can follow easily. Thereby, since it is only that harness receives a curve and distraction, slack of harness, torsion, and **** are prevented.

[0021] If it is in slide door feed structure of claim 2 of this invention, In slide door feed structure by which harness was cabled by slide door from the body, The door side harness guide which in rotation out of a determined direction is connected and becomes so that may be mutually prevented with the piece which is connected and becomes so that may be mutually prevented with the piece which two or more piece adjoins mutually enabling free rotation, While connecting with a connecting member provided so that U-turn allocation was carried out in the state where it turned up in a halfway part at said slide door, back and forth movement might be free to a slide door and a tip of the door side harness guide concerned might not be rotated to it, A end face of said door side harness guide was fixed to said slide door, and said harness cabled by slide door from the body side was cabled in the door side harness guide concerned.

[0022] namely, **** accompanying [since harness is cabled in the door side harness guide] opening and closing movement of a slide door, compression, slack, and torsion -- bending -- etc. -- the door side harness guide receives external force, and harness does not require external force directly. moreover -- the door side harness guide does not have a possibility that bending, slack, and a part that torsion produces may not be fixed since [to require] it came to connect two or more piece, enabling free rotation and U-turn allocation was carried out mutually -- a curve -- it being easy and, Since it is cabled inside, and it bends, there is [opening and closing movement of a slide door is followed smoothly,] nothing also with **** harness impossible for that slack and torsion produce and harness does not swell out of the door side harness guide, it is not necessary to take many free space so that it may not interfere with other parts.

[0023] Since a stopper part which prevents rotation out of a determined direction of piece connected with piece which constitutes the door side harness guide is provided, and each piece of the door side harness guide does not rotate outside a determined direction, a circle portion of U-turn and a swelling of pars intermedia are prevented.

[0024] If it is in slide door feed structure of claim 3, In slide door feed

structure by which harness was cabled by slide door from the body, While supporting to a bracket in which the body side supporting spindle of a passage part harness guide end face which consists of two or more piece connected mutually enabling free rotation was provided by said body, enabling free rotation, The door side supporting spindle at said tip of a passage part harness guide is supported to a connecting member provided so that back and forth movement might be free to said slide door and it might not rotate to it, enabling free rotation, The door side harness guide which in rotation out of a determined direction is connected and becomes so that may be mutually prevented with the piece which two or more piece adjoins mutually enabling free rotation, While carrying out U-turn allocation in the state where it turned up in a halfway part at said slide door and connecting a tip of the door side harness guide concerned to said connecting member, A end face of said door side harness guide was fixed to said slide door, and said harness was inserted in into said passage part harness guide from the body side, and it inserted in into the door side harness guide through said door side supporting spindle and said connecting member, and extended and cabled at a door from the door side harness guide end face.

[0025]That is, even a slide door is continuously wired by harness from the body, and connector connection can be made unnecessary between a passage part harness guide and the door side harness guide.

[0026]There is no restriction in wiring and wiring of a signal wire and a power source wire is also attained.

[0027]As for wiring between the body and a slide door, wiring by the side of a slide door also slackens, and torsion and worn generating are prevented. In the wiring concerned, external force is not applied directly.

[0028]In addition, in slide door feed structure of claim 4, said harness was inserted in into said passage part harness guide from the center of said body side supporting spindle, and was extended and cabled at a door from the connecting member concerned through inside of the center of said door side supporting spindle, and said connecting member.

[0029]Namely, although the door side supporting spindle at the tip of a passage part harness guide and the body side supporting spindle of a end face rotate by opening and closing movement of a slide door, Since harness is running along the center of the door side supporting spindle and the body side supporting spindle, harness, As opposed to a side which comes into a body supporting spindle as opposed to a side which a side included in the door side supporting spindle leaves, It is only that a side to leave receives rotation (rotation) by a rotation angle by this rotation, Since it is also very rare to do beyond 1 rotation (360 degrees) of, and to also be twisted and for it to be very rare for harness to receive damage, without receiving hauling and compression, and also to be resisting an operation of a passage part harness guide, The endurance of harness is improved and a passage part harness guide moves smoothly.

[0030]In slide door feed structure of claim 5, piece which constitutes said passage part harness guide was provided in a wall by one side part, and was formed in a section U shape in which an other side portion carries out an opening.

[0031]Namely, each piece of a passage part harness guide, A wall provided in a one side part holding intensity holding shape maintenance of each piece, and a connected state of each piece, since it is formed in a section U shape, because an other side portion is carrying out the opening. Compared with connection of piece by which a wall was provided in a side part, it can do flexibly because an other side portion of each piece will bend if external force is received. It corresponds to torsion added to a passage part harness guide by inclination change of a slide door which can be set at the time of slide door opening and closing by this, and operates smoothly.

[0032]If it is in slide door feed structure of claim 6, As rotation out of a determined direction is mutually prevented with the piece which said passage part harness guide adjoins, it can prevent that the piece which constitute a passage

part harness guide from two or more piece connecting enabling free rotation, and forming mutually rotates out of a determined direction.

[0033]Namely, each piece of a passage part harness guide. Since it does not rotate outside a determined direction, in order to regulate a hand of cut of a passage part harness guide accompanying slide door opening and closing movement, and a curving direction and to curve in the predetermined direction, a motion may be smooth, interference with other parts can be prevented and a space may also be smaller. Irregular slack or torsion are not given to harness inserted in in a passage part harness guide, either.

[0034]In addition, in slide door feed structure of claim 7. While providing a slide guide member in said slide door and providing an engaged portion which becomes this slide guide member from a projection or a slot, An engagement part which becomes said connecting member from a slot or a projection which engages with said engaged portion is provided, Said door side harness guide was allocated in said slide guide member, and a swelling prevention guide which prevents a swelling of the upper part of this slide guide member and the lower part in which said door side harness guide curved to either at least was provided.

[0035]Namely, an input which is going to rotate a connecting member received from a passage part harness guide which rotates by opening and closing of a slide door is resisted, While carrying out a baffle of a connecting member, and a slide of a cross direction between a slide guide member and a connecting member accompanying movement of a cross direction of a slide door becoming easy and operating smoothly to movement of a slide door, Since harness is protected from relative displacement accompanying opening and closing movement of a slide door by slide guide member, it becomes still easier [wiring].

[0036]A swelling of the door side harness guide is prevented further, it is not necessary to take a space which permits a swelling, and a practical use space in a slide door can extend.

[0037]

[Embodiment of the Invention]Hereafter, the 1 embodiment of this invention is described according to figures. It is a figure showing the slide door feed structure which drawing 3 requires for this embodiment from drawing 1, and a half-opening state is shown in drawing 2, and the opened state is shown for slide door 1 closed state in drawing 1 at drawing 3.

[0038]Namely, as shown also in drawing 4, between the slide door 1 and the body 11, Connect mutually between two or more piece 12 and the piece 12 and 12 which ... adjoins, enabling free rotation, and the passage part harness guide 13 which it comes to connect in the shape of a chain is formed, From the body 11, the harness 14 which supplies a power supply to the slide door 1 is accommodated in this passage part harness guide 13, and is cabled.

[0039]The body side supporting spindle 21 is formed in the end by the side of the body 11 of this passage part harness guide 13, and this body side supporting spindle 21 is supported, enabling free rotation to the bracket 22. The body holding part 23 is formed in this bracket 22, and it is being fixed to the body 11 via this body holding part 23.

[0040]The door side supporting spindle 31 is formed in the end by the side of the slide door of said passage part harness guide 13, and this door side supporting spindle 31 is supported, enabling the free rotation to the connecting member 32. The slots 33 and 33 as an engagement part are formed in the side part of this connecting member 32, and these engagement grooves 33 and 33, As shown in drawing 5 which is an A-A sectional view of drawing 2, it is engaging with the projections 35 and 35 as an engaged portion of the slide guide member 34 provided in said slide door 1, enabling a free slide.

[0041]By this, as detailed structure is omitted and it is shown in drawing 6 of the schematic illustration showing an operation outline, said connecting member 32, While back and forth movement is free, the inside of the slide guide member 34 which moves to a vehicles cross direction at the slide door 1 provided in said slide door 1, and one according to movement between the opened state 36 of the

slide door 1, and the closed state 37 by meeting slide door 1 from the opened state 37 of the slide door 1. While the slide door 1 projects and projects to the method of the outside of the body side (it is a method of outside in the cross direction) and will be in a half-opening state (graphic display abbreviation). Or although said passage part harness guide 13 rotates to the method of the outside of vehicles centering on said body side supporting spindle 21 by movement of the slide door [it projects conversely and will be in the full-close state 37 from a half-opening state] 1 of a between, The baffle is carried out by the slide guide member 34 so that the connecting member 32 may not rotate with rotation of this passage part harness guide 13.

[0042]From the body side, drawing 6 is what looked at the slide door, and in drawing 6 7001, The step provided in the door opening of the body is shown, and Roye L'Ora rolls the inside of Roa Guy Delair besides the figure formed in this step 7001 bottom, Between the body and the front lower parts of the slide door 1 is connected with the Roye L'Ora bracket 7002 with which Roye L'Ora was provided, The front upper part of the slide door besides a figure, the body, and the back pars intermedia and the body of the slide door were connected with the upper bracket and the center roller bracket, respectively, and it has accomplished so that a slide door may move the body to a cross direction.

[0043]They are the boots made of rubber which 7003 covers a floor, 7004 covers the rear pillar of a door opening, and 7005 covers the passage part harness guide 13, and prevent invasion of storm sewage.

[0044]As shown said harness 14 in drawing 4, after being inserted in into said passage part harness guide 13 via the center of said body side supporting spindle 21, it has extended from the center of said door side supporting spindle 31, and is cabled in said passage part harness guide 13. The vehicle body side connector 41 is formed in said harness 14 which inserted in said body side supporting spindle 21, and this vehicle body side connector 41 is supported by said bracket 22.

[0045]The door side harness guide 52 which comes to connect with said connecting member 32 between two or more piece 51 and the piece 51 and 51 which ... adjoins in the shape of a chain rotatable is formed, In this door side harness guide 52, the harness 14 which extended from said door side supporting spindle 31 is inserted in, and it is cabled. As this door side harness guide 52 was shown in drawing 6, U-turn allocation is carried out in the state where it turned up in the halfway part at said slide door 1, and the door holding part 53 provided in that end is being fixed to the slide door 1 via said slide guide member 34. Said harness 14 which extended from said door holding part 53 is connected to devices, such as closure provided in the slide door 1 via the connectors 54 and 54.

[0046]Said slide guide member 34 accomplishes 2 stage constitution of the upper row part 61 and the lower-berth part 62, as shown also in drawing 7, and as shown in drawing 7 and drawing 8, it is accommodated in the lower-berth part 62, enabling free movement of said connecting member 32 and said door side harness guide 52. As shown in drawing 10 which is drawing 9 and the E-E cross section which are D-D cross sections in drawing 6, the upper row part 61 and the lower-berth part 62 are opened for free passage, and it is constituted so that the door side harness guide 52 which made a U-turn and has been arranged up and down can be accommodated. The top panel 63 in this slide guide member 34, the bottom 64, and the inside wall 65 (refer to drawing 7) constitute the swelling prevention guide which prevents the swelling (the dashed dotted line in drawing 6 illustrates) to which said door side harness guide 52 accommodated in the slide guide member 34 concerned curved.

[0047]As said slide guide member 34 is shown in drawing 11, it consists of the side wall members 71 and 71 joined mutually, and each-side-walls members 71 and 71 are estranged and combined with the rivet 72 or the bolt nut 73 with a color.

[0048]8001 is a bracket attached to a door panel (not shown).

[0049]As the passage part harness guide 13 is shown in drawing 12, it is covered

in the boots 74 of rectangular shape, and exposure is prevented. As shown in above-mentioned drawing 4, this passage part harness guide 13 connects mutually between said two or more piece 12 and the piece 12 and 12 which ... adjoins, enabling free rotation, and it comes to connect it in the shape of a chain.

[0050]As shown in drawing 13, the wall 81 forms the piece 12 which constitutes this passage part harness guide 13 in a one side part, it is formed in the section U shape which an other side portion carries out opening 811, and the opposing pieces 82 and 82 which carried out for relativity are formed successively with said wall 81.

[0051]For this reason, an other side portion opening 811, the wall 81 provided in the one side part holding the intensity which connects the opposing pieces 82 and 82 and holds shape maintenance of the piece 12, and the connected state of each piece 12 and 12 comrades by carrying out. Compared with connection of the piece in which the wall which connects the opposing pieces 82 and 82 with a side part was provided, it can do flexibly because the other side portion (opening 811 side) of the piece 12 will bend if external force is received in the piece 12.

[0052]Thereby, pliability is secured, and each piece 12 and ... which constitute the passage part harness guide 13 are constituted so that it can respond to torsion added to the passage part harness guide 13 by inclination change of the slide door 1 which can be set at the time of slide door opening and closing.

[0053]That is, as shown in drawing 14 which is a schematic illustration of slide door part vertical section, when opening the slide door 1, the slide door 1 projects and projects first to the method of the outside of the body 11 side (it is the outside in the cross direction), and is displaced on the latter object of half-opening. In order that the upper part [center section] may be narrowed and breadth of a car may take the largest possible method space 8002 of the upper part of the vehicle interior of a room 92 at this time, the quantity 93 in which the upper roller bracket 91 goes into the vehicle interior of a room 92 is set up small.

[0054]It is set up take out the Roye L'Ora bracket 94 side outside more, in order to take the escape of a tire part so that the slide door 1 may not contact a tire. Therefore, since a motion of a sliding direction besides the elasticity to the cross direction laps, torsion is also added to said harness 14 between the body 11 and the slide door 1. However, the variation of the sliding direction produced by inclination of the slide door 1 at the time of opening and closing is small.

[0055]The state where the dashed dotted line opened the state where the slide door 1 closed the solid line is shown among drawing 14.

[0056]As shown in drawing 13, the round hole 101 is established in the end part at the opposing pieces 82 of said piece 12 which constitutes said passage part harness guide 13. The pin 102 which can be inserted in said round hole 101 of the adjoining piece 12 protrudes on the other end of said opposing pieces 82, and it is constituted so that between the adjoining piece 12 and 12 may be connected mutually, enabling free rotation.

[0057]And as for the tip of the pin 102, the omission after it has the head 8004 of a major diameter and the pin 102 was inserted in said round hole 101 by this head 8004 from the axis 8003 is prevented.

[0058]The stopper part 103,103 protrudes on the other end of said opposing pieces 82, and the edge of said wall 81 forms the contact face 104,104 of this stopper part 103,103. Thereby, as for the adjoining piece 12 and 12 comrades, the piece 12 from which rotation out of a determined direction was prevented, and rotation out of this determined direction was prevented, and the passage part-harness guide 13 with which it comes to connect ... are also constituted so that rotation out of a determined direction may be prevented. And the rib 105,105 for reinforcement of the edge of the object for the harness support for supporting so that harness may not fall out from the opening 811, and the opposing pieces 82

protrudes on the opening 811 side of said opposing pieces 82.

[0059]The step 8005 is formed, and when the adjoining piece 12 and 12 is connected, it is provided in the middle of the round hole 101 of said opposing pieces 82, and the pin 102 so that the surface of the opposing pieces 82 and 82 of the adjoining piece 12 and 12 may become flat-tapped.

[0060]and the passage part harness guide 13 arranged said wall 81 perpendicularly (lengthwise direction), arranged said opposing pieces 82 horizontally (transverse direction), turned perpendicularly said pin 102 and the round hole 101 which were established in the opposing pieces 82, and connected them for rotating to the circumference of a vertical axis.

[0061]Even when other embodiments of the passage part harness guide 13 are shown and the harness guide 14 is not bundled thickly, drawing 15 and drawing 16 are accomplished so that it may not fall out from each piece 12 of the passage part harness guide 13, and ...

[0062]According to the embodiment of drawing 15, it allocates so that the opening 811 and the wall 81 may come to 1 side by turns, and connects so that the adjoining piece 12 and 12, the openings 811 and 811 of ..., and ... may not carry out an opening towards the same direction.

[0063]According to the embodiment of drawing 16, it protrudes on each piece 12, the opening 811 of ..., and the length that shifts said ribs 105a and 105a to ... by the longitudinal direction of the passage part harness guide 13, and intersects it in two places towards the opposing-pieces 82 side of another side from one opposing-pieces 82 side.

[0064]On the other hand, said piece 51 which constitutes said door side harness guide 52, As shown in drawing 17, it is constituted by the wall 111,111 which carried out for relativity, and the opposing pieces 112,112 which form both the walls 111,111 successively, and the round hole 113 is established in the end part in the opposing pieces 112 of the piece 51 concerned. The pin 114 which can be inserted in said round hole 113 of the adjoining piece 51 protrudes on the other end of said opposing pieces 112, and it is constituted so that between the adjoining piece 51 and 51 can be connected for *****, enabling free rotation.

[0065]And as for the tip of the pin 114, the omission after it has the head 8102 of a major diameter and the pin 114 was inserted in said round hole 113 by this head 8102 from the axis 8101 is prevented.

[0066]The step 8103 is formed in the middle of the round hole 113 of said opposing pieces 112, and the pin 114, and it is provided so that the surface of the opposing pieces 112-1112 of the piece 51 and 51 which adjoins when the adjoining piece 51 and 51 is connected may become flat-tapped. By supposing that it is flat-tapped, it is not caught in other parts and a smooth motion can be performed.

[0067]The stopper part 121,121 protrudes on one rising wood and margo-inferior part of the wall 111, and the edge of the end part of said opposing pieces 112,112 forms the contact face 122,122 of this stopper part 121,121 in them. The adjoining piece 51 and 51 comrades by this, Rotation out of a determined direction is prevented also for the piece 51 from which rotation out of a determined direction was prevented, and rotation out of this determined direction was prevented, and the door side harness guide 52 with which it comes to connect ..., The locus is regulated by the determined direction when the door side harness guide 52 moves, The self-regulation (self-hold) of the curving direction with the time of especially U-turn allocation being carried out can be carried out, and interference with other parts can be prevented, and the first (start of a motion) moving direction of movement, i.e., the curve (bent) direction of the door side harness guide 52, becomes settled, and it is constituted so that it can move smoothly.

[0068]And the door side harness guide 52 arranged said wall 111 horizontally (transverse direction), arranged said opposing pieces 112 perpendicularly (lengthwise direction), turned horizontally said pin 114 and the round hole 113 which were established in the opposing pieces 112, and it connected them so that

it might rotate to the circumference of a horizontal axis.

[0069]In this embodiment concerning the above composition, since the harness 14 between the body 11 and the slide door 1 is cabled in the passage part harness guide 13, it slackens and can prevent torsion and ****. Even if external force inputs into 13 copies of passage part harness guides, the passage part harness guide 13 can receive and the input of the direct external force to the harness 14 can be prevented.

[0070]Therefore, since endurance is high, in addition there is no possibility that interference with other parts etc. may arise since the harness 14 has not come outside and elasticity, a curve, and the move direction are also guaranteed, while being able to perform wiring structure easily, it becomes smooth [the operation of the slide door 1]. Wiring quality also improves.

[0071]By what the harness 14 which extended from said passage part harness guide 13 is cabled for in the door side harness guide 52. It is also unnecessary to provide a connector in the middle of 13 copies of passage part harness guides to 52 copies of door side harness guides, and said body 11 to the slide door 1 can wire continuously. There is no restriction in wiring and wiring of a signal wire and a power source wire can also be carried out.

[0072]In addition, the wiring by the side of the slide door 1 also slackens, and can prevent torsion and worn generating. In addition, also in the wiring concerned, even if external force is added, the door side harness guide 52 wins popularity, and the direct input of external force can be prevented to the harness 14, and it becomes what has high endurance.

[0073]In addition, since there is no possibility that interference with other parts etc. may arise since the harness 14 has not come outside and elasticity, a curve, and the move direction are also guaranteed, while being able to perform wiring structure easily, it becomes smooth [the operation of the slide door 1]. Wiring quality also improves.

[0074]By forming the projections 35 and 35 in the slide guide member 34 of the slide door 1, and establishing the slots 33 and 33 which engage with said projection in the connecting member 32 which moves along with this slide guide member 34, The slide which met the baffle and the slide guide member 34 of the connecting member 32 can be made easy.

[0075]By this each piece 51 of the passage part harness guide 13 and 51 comrades, Since it does not rotate outside a determined direction, and the hand of cut of the passage part harness guide 13 accompanying slide door opening and closing movement and a curving direction are regulated and it curves in the predetermined direction, while being able to operate smoothly to movement of the slide door 1, A motion may be smooth, interference with other parts can be prevented and a space may also be smaller.

[0076]Irregular slack or torsion are not given to the harness inserted in in the passage part harness guide 13, either.

[0077]And by said slide guide member 34, the swelling of the door side harness guide 52 can be prevented, and the practical use space in the slide door 1 can be extended.

[0078]each piece 51 of said door side harness guide 52 and ... since comrades do not rotate outside a determined direction by the stopper part 121,121, they can prevent the circle portion of U-turn, and the swelling of pars intermedia.

[0079]In addition, since each piece 12 of said passage part harness guide 13 and ... are formed in the section U shape, they are flexible. It can respond to torsion by inclination change of the slide door 1 which can be set at the time of slide door 1 opening and closing by this, and can operate smoothly.

[0080]

[0081]It is a figure in which drawing 20 shows other embodiments from drawing 18, and what was connected so that said door side harness guide 52 might rotate to the circumference of a vertical axis is shown.

[0082]And the piece which constitutes the door side harness guide 52, The piece

51 shown in drawing 17 used for the door side harness guide 52 of said embodiment and the isomorphism-like piece 51 are used, Allot so that said wall 111 may be countered perpendicularly (lengthwise direction), and it allots so that said opposing pieces 112 may be countered horizontally (transverse direction), Said pin 114 and the round hole 113 which were established in the opposing pieces 112 were turned perpendicularly, and it connected so that said door side harness guide 52 might rotate to the circumference of a vertical axis.

[0083] Thereby, the space of a sliding direction can be earned by allotting the cross direction in the slide door 1.

[0084] The slide guide 34 of the door side harness guide 52 upper part considered it as support of the connecting member 32, and the function of only the baffle mentioned above, and abolished the function which guides a motion of the door side harness guide 52.

[0085] Thereby, at the time of movement, there is no possibility of contacting the slide guide 34, and the door side harness guide 52 becomes unnecessary to set up the member which prevents generating of the sound by contact.

[0086] And in this way, even if it did not guide the door side harness guide 52 by the slide guide 34, since it did not curve greatly by the stopper part 121, 121 of door side harness guide 52 self, it came out enough and a certain thing was checked by experiment.

[0087] Using the piece 51 shown in drawing 17 used for the door side harness guide 52 of said embodiment, and the isomorphism-like piece 51, the passage part harness guide 13 counters horizontally (transverse direction) up and down, and arranges said wall 111 on it, what has a change of inclination [as opposed to / arrange said opposing pieces 112, provide horizontally said pin 114 and the round hole 113 which were established in the opposing pieces 112, make it rotate to the circumference of a horizontal axis, and / the body 11 at the time of opening and closing] of the slide door 1 large so that it may counter perpendicularly (lengthwise direction) -- correspondence -- it was presupposed that it is easy. The variation of distance between the slide door 1 and the body 11 can respond because said passage part harness guide 13 curves to a sliding direction. At this time, the door opening and the slide door 1 by the side of the body 11 shall give a margin caudad that said passage part harness guide 13 seems to curve to a sliding direction.

[0088] Since it can cable in the form where the lower part made a U-turn and there is nothing that the passage part harness guide 13 juts out of the body 11 greatly to the door opening side (it extends), when the slide door 1 closes, The middle of not only the lower part of the slide door 1 but a door opening sliding direction. For example, in the back quarter pillar of the door opening near [where the center roller formed in the center roller bracket is guided, and it moves] a waist rail section, and the body in which the rear wheel house protrudes to the door opening side, it can also provide in a rear wheel house part etc.

[0089] In addition, the piece 12 and ... which constitute said passage part harness guide 13 use a thing with said wall 81 (only the upper part is illustrated) up and down, and improve the rigidity. By this, it can be strong to hauling by the door opening close, and cannot change by pushing force, either, but can move smoothly.

[0090]

[Effect of the Invention] If it is in the slide door feed structure of claim 1 of this invention as explained above, Since the harness between the body and a slide door is cabled in the passage part harness guide, a passage part harness guide receives external force accompanying the opening and closing movement of a slide door, such as ****, compression, slack, and bending, and it is not directly applied to harness. It is not necessary to take large free space in consideration of interference with other parts, without harness swelling besides a passage part harness guide.

[0091] And since two or more piece is connected mutually, enabling free rotation, it is not said constantly [a passage part harness guide / slack, torsion, and

the part to produce or its form to bend] .

[0092] Each piece can rotate to change of the interval between the body accompanying the opening and closing movement of a slide door, and a slide door mutually, and can curve and carry out the distraction to it, and it can follow easily. Thereby, since it is only that harness receives a curve and the distraction, the slack of harness, torsion, and **** are prevented.

[0093] Therefore, wiring structure becomes it is easy and smooth [an operation] . Endurance is high and wiring quality also improves.

[0094] **** accompanying [since harness is cabled in the door side harness guide if it is in the slide door feed structure of claim 2 of this invention] the opening and closing movement of a slide door, compression, slack, and torsion -- bending -- etc. -- the door side harness guide receives external force, and harness does not require external force directly.

[0095] furthermore -- since [to require] it came to connect two or more piece, enabling free rotation and U-turn allocation was carried out mutually, bend the door side harness guide and it does not have a possibility that slack and the part which torsion produces may not be fixed -- a curve -- it being easy and, Since it is cabled inside, and it bends, there is [the opening and closing movement of a slide door is followed smoothly,] nothing also with **** harness impossible for that slack and torsion produce and harness does not swell out of the door side harness guide, it is not necessary to take many free space so that it may not interfere with other parts.

[0096] And since the stopper part which prevents rotation out of the determined direction of the piece connected with the piece which constitutes the door side harness guide is provided, and each piece of the door side harness guide does not rotate outside a determined direction, the circle portion of U-turn and the swelling of pars intermedia are prevented.

[0097] Therefore, wiring structure becomes it is easy and smooth [an operation] like claim 1. Endurance is high and wiring quality also improves.

[0098] If it is in the slide door feed structure of claim 3, even a slide door is continuously wired by harness from the body, and connector connection can be made unnecessary between a passage part harness guide and the door side harness guide.

[0099] There is no restriction in wiring and wiring of a signal wire and a power source wire is also attained.

[0100] As for wiring between the body and a slide door, the wiring by the side of a slide door also slackens, and torsion and worn generating are prevented. In the wiring concerned, external force is not applied directly.

[0101] Therefore, wiring structure becomes it is easy and smooth [an operation] like claim 1. Endurance is high and wiring quality also improves.

[0102] In addition, although the door side supporting spindle at the tip of a passage part harness guide and the body side supporting spindle of a end face rotate by the opening and closing movement of a slide door in the slide door feed structure of claim 4, Since harness is running along the center of the door side supporting spindle and the body side supporting spindle, harness, As opposed to the side which comes into a body supporting spindle as opposed to the side which the side included in the door side supporting spindle leaves, It is only that the side to leave receives rotation (rotation) by the rotation angle by this rotation, Since it is also very rare to do beyond 1 rotation (360 degrees) of, and to also be twisted and for it to be very rare for harness to receive damage, without receiving hauling and compression, and also to be resisting the operation of a passage part harness guide, The endurance of harness is improved and a passage part harness guide moves smoothly.

[0103] In the slide door feed structure of claim 5. It is that the other side portion is carrying out the opening, the wall provided in the one side part holding the intensity holding shape maintenance of each piece, and the connected state of each piece, since each piece of the passage part harness guide is formed in the section U shape, Compared with connection of the piece by which the wall

was provided in the side part, it can do flexibly because the other side portion of each piece will bend if external force is received.

[0104]Therefore, it can respond to torsion added to the passage part harness guide by inclination change of the slide door which can be set at the time of slide door opening and closing, and can operate smoothly.

[0105]If it is in the slide door feed structure of claim 6, Since each piece of a passage part harness guide does not rotate outside a determined direction, the hand of cut of the passage part harness guide accompanying slide door opening and closing movement and a curving direction are regulated and they curve in the predetermined direction, a motion may be smooth, they can prevent interference with other parts and its space may also be smaller. Irregular slack or torsion are not given to the harness inserted in the passage part harness guide, either.

[0106]In addition, in the slide door feed structure of claim 7. The input which is going to rotate the connecting member received from the passage part harness guide which rotates by opening and closing of a slide door is resisted, While carrying out the baffle of a connecting member, and the slide of the cross direction between the slide guide member and connecting member accompanying movement of the cross direction of a slide door becoming easy and operating smoothly to movement of a slide door, Since harness is protected from the relative displacement accompanying the opening and closing movement of a slide door by the slide guide member, it becomes still easier [wiring].

[0107]The swelling of the door side harness guide is prevented further, it is not necessary to take the space which permits a swelling, and the practical use space in a slide door can extend.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a perspective view of an important section showing the 1 embodiment of this invention.

[Drawing 2]It is a perspective view showing the half-opening state of the slide door of the embodiment.

[Drawing 3]It is a perspective view of an important section showing the opened state of the slide door of the embodiment.

[Drawing 4]It is an explanatory view showing each harness guide of the embodiment.

[Drawing 5]It is an A-A sectional view of drawing 2.

[Drawing 6]It is an explanatory view showing the state where the slide door of the embodiment was moved to the open position and the closed position.

[Drawing 7]It is a B-B sectional view of drawing 6.

[Drawing 8]It is a C-C sectional view of drawing 6.

[Drawing 9]It is a D-D sectional view of drawing 6.

[Drawing 10]It is an E-E sectional view of drawing 6.

[Drawing 11]It is a perspective view showing the slide guide member of the embodiment.

[Drawing 12]It is a perspective view showing the boots of the embodiment.

[Drawing 13]It is an exploded perspective view showing the passage part harness guide of the embodiment.

[Drawing 14]It is an explanatory view showing the effect by the passage part harness guide of the embodiment.

[Drawing 15]It is a fragmentary perspective view showing other embodiments of the passage part harness guide of the embodiment.

[Drawing 16]It is an exploded perspective view showing the embodiment of further

others of the passage part harness guide of the embodiment.

[Drawing 17] It is a perspective view showing the door side harness guide of the embodiment.

[Drawing 18] It is a perspective view in which showing other embodiments of this invention and showing the state where the slide door was moved to the door opening side.

[Drawing 19] It is a perspective view showing the state where the slide door of the embodiment was moved to the door closed side.

[Drawing 20] It is an enlarged drawing showing the important section of the embodiment.

[Drawing 21] It is a top view showing the 1st conventional example.

[Drawing 22] It is a perspective view showing the 2nd conventional example.

[Drawing 23] It is a perspective view showing the 3rd conventional example.

[Drawing 24] It is a perspective view showing an important section for the conventional example.

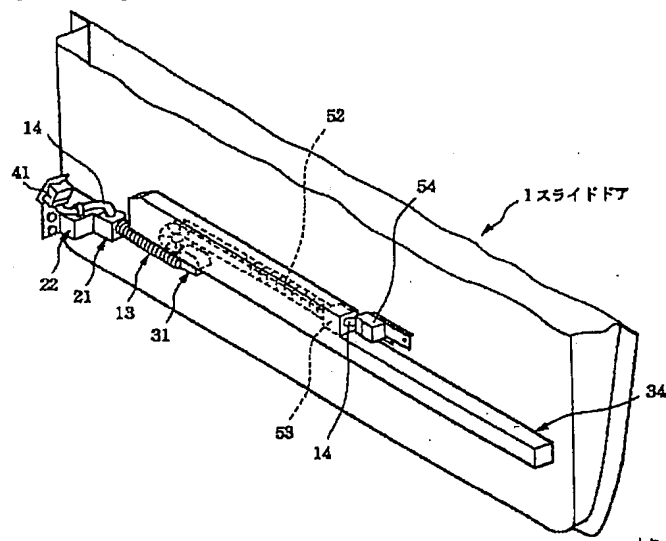
[Drawing 25] It is the sectional view which met the H-H line of drawing 24.

[Description of Notations]

- 1 Slide door
- 11 Body
- 12 Piece
- 13 Passage part harness guide
- 14 Harness
- 21 Body side supporting spindle
- 22 Bracket
- 31 Door side supporting spindle
- 32 Connecting member
- 33 Slot
- 34 Slide guide member
- 35 Projection
- 51 Piece
- 52 Door side harness guide
- 81 Wall
- 121 Stopper part

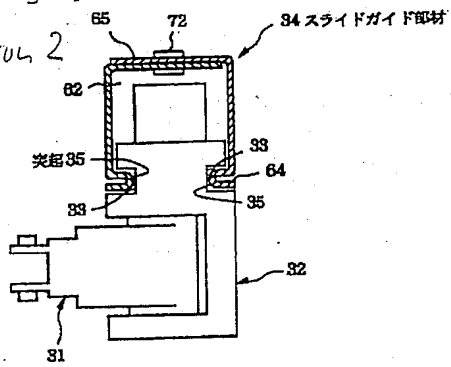
DRAWINGS

[Drawing 1]



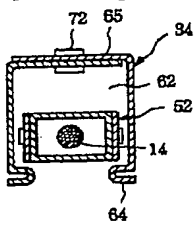
[Drawing 5]

A-A von 2

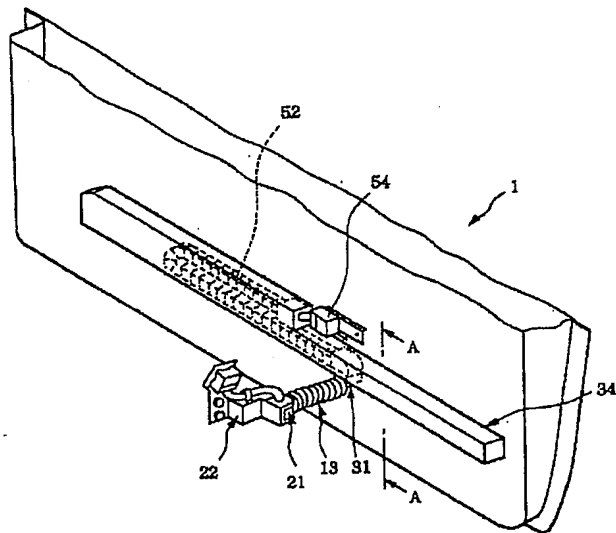


[Drawing 8]

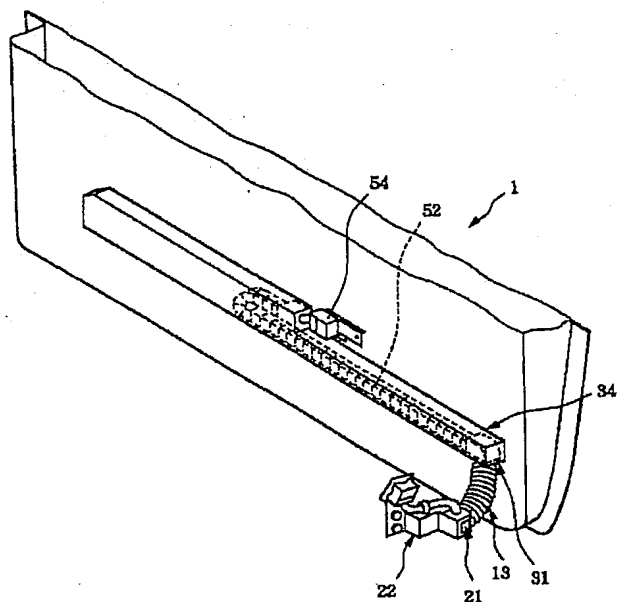
C-C von 6



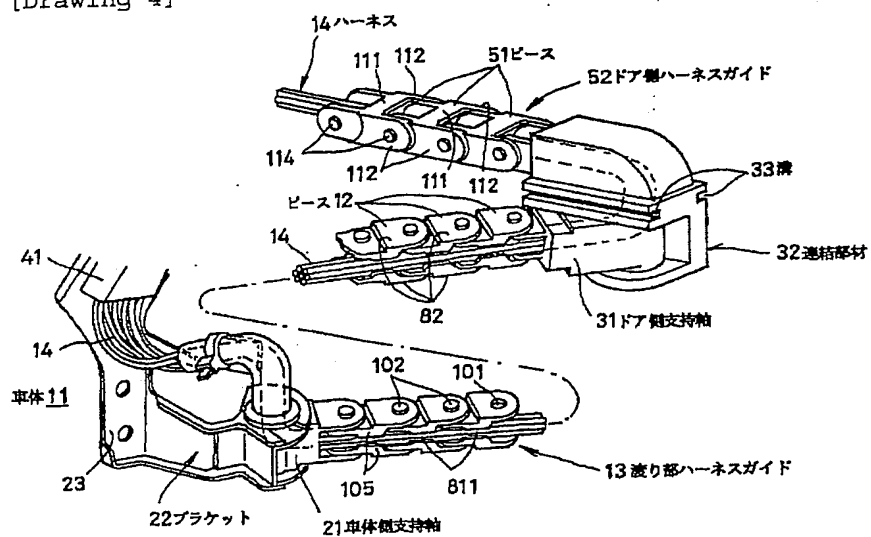
[Drawing 2]



[Drawing 3]

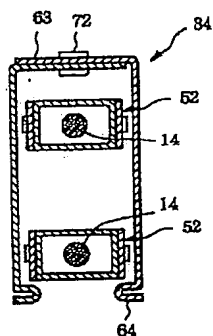


[Drawing 4]

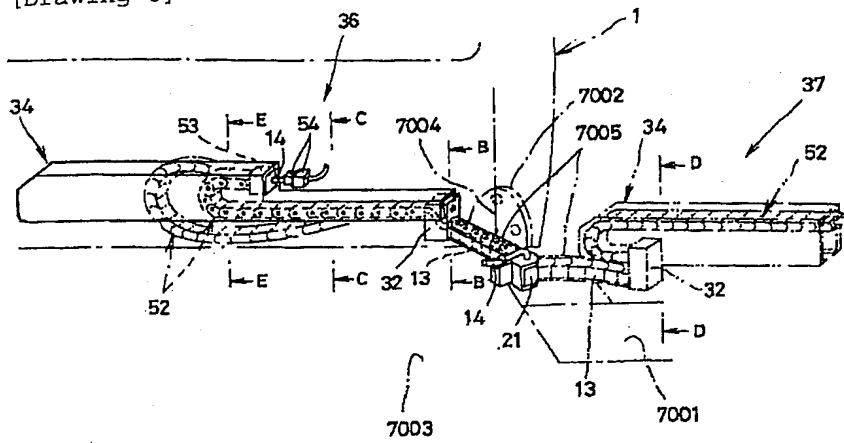


[Drawing 10]

E-E von 6

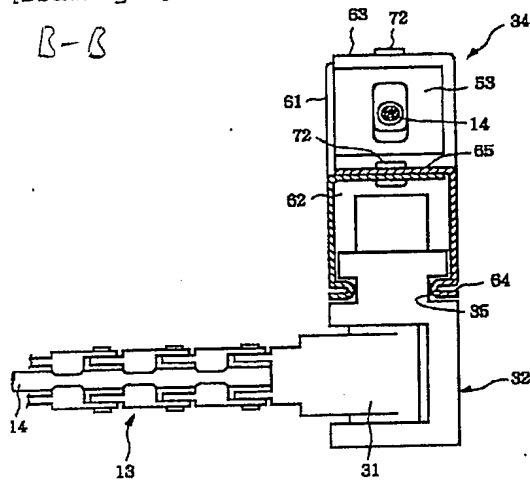


[Drawing 6]



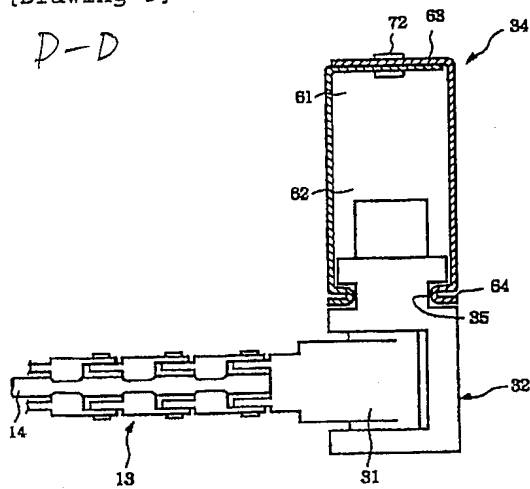
[Drawing 7]

B-B

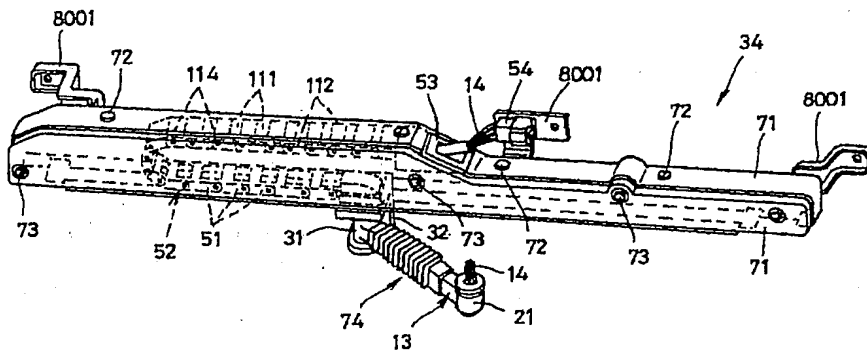


[Drawing 9]

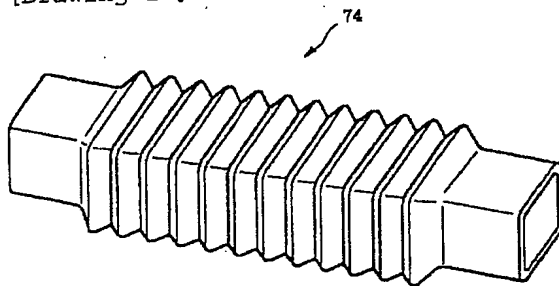
D-D



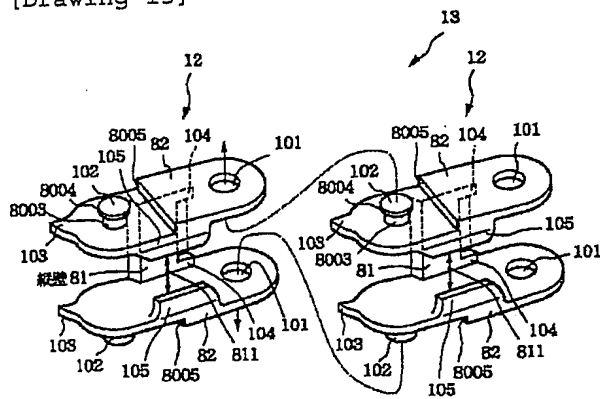
[Drawing 11]



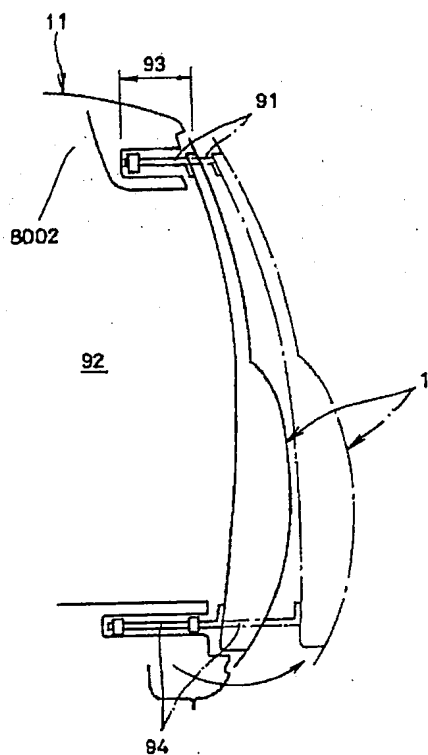
[Drawing 12]



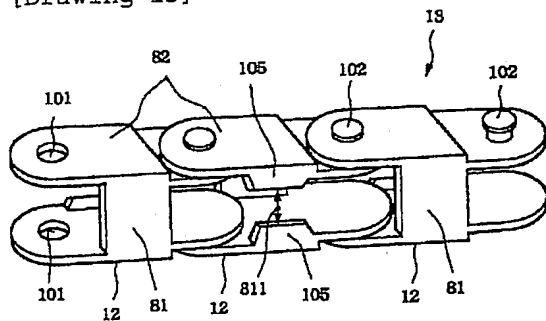
[Drawing 13]



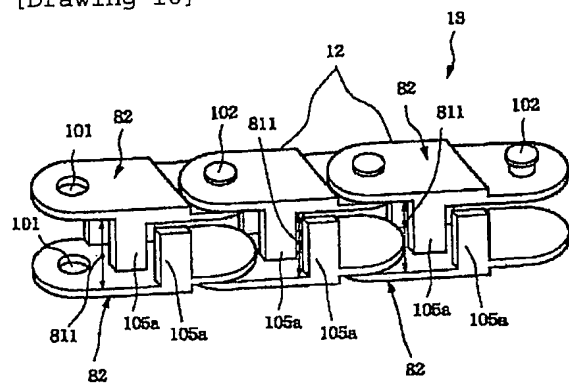
[Drawing 14]



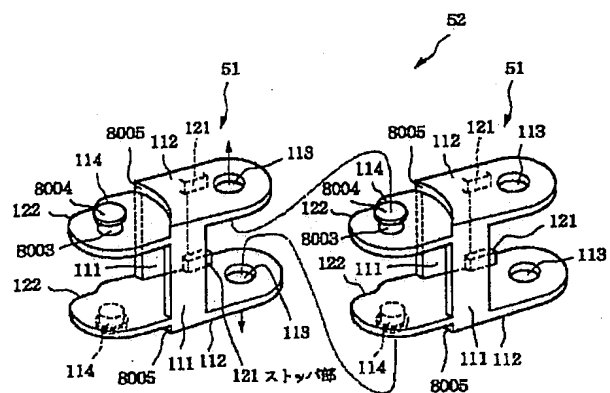
[Drawing 15]



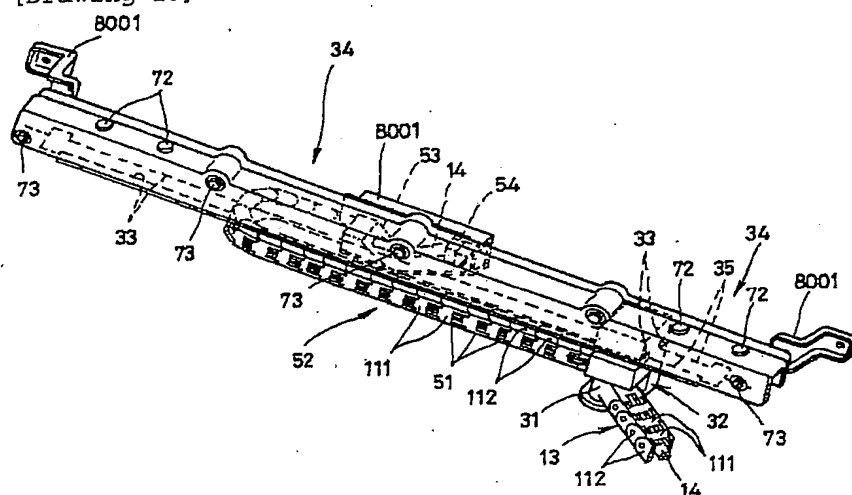
[Drawing 16]



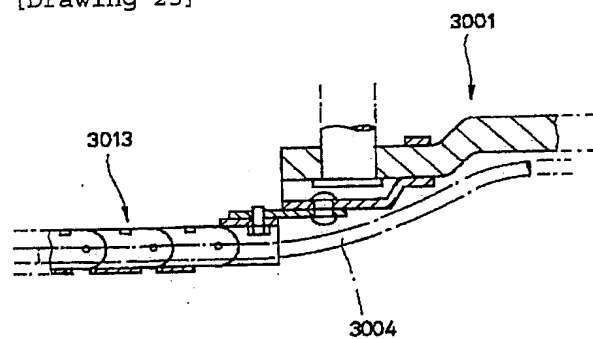
[Drawing 17]



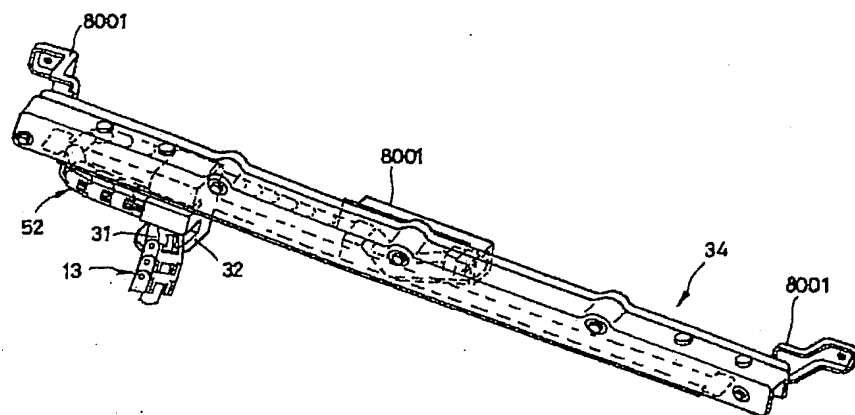
[Drawing 18]



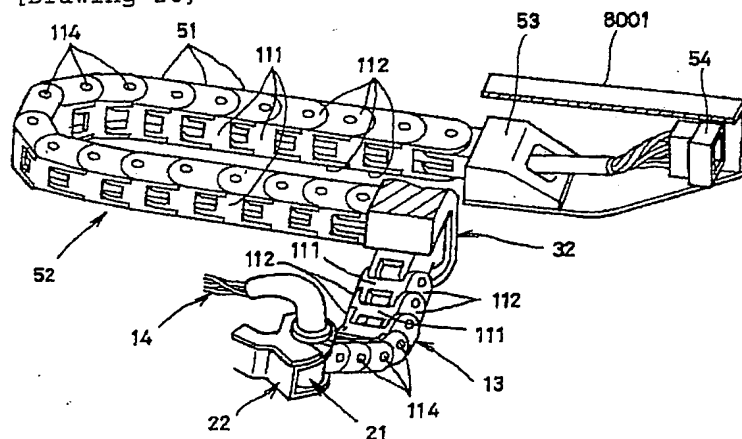
[Drawing 25]



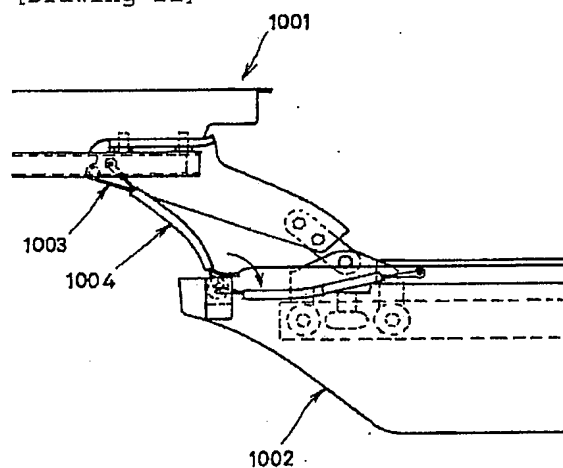
[Drawing 19]



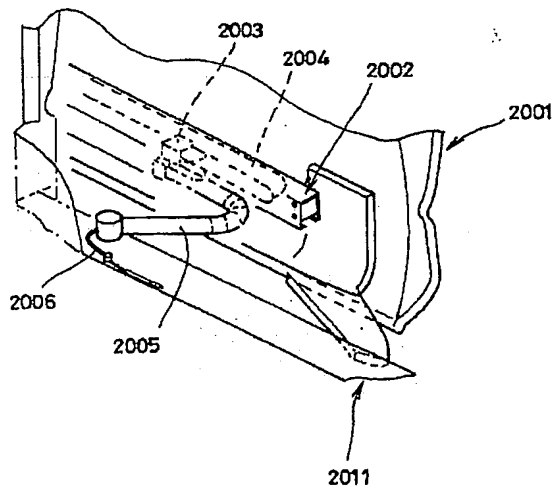
[Drawing 20]



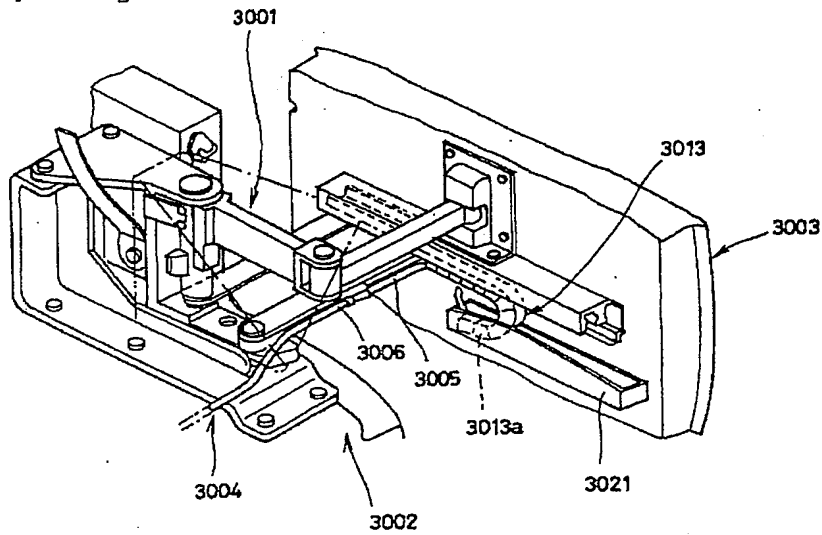
[Drawing 21]



[Drawing 22]



[Drawing 23]



[Drawing 24]

